

2914/106
APPLIED BIOLOGY PRACTICAL I
Oct./Nov. 2021
Time: 4 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN APPLIED BIOLOGY

MODULE I

APPLIED BIOLOGY PRACTICAL I

4 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Non-programmable scientific calculator.

Answer ALL the questions in the answer booklet provided.

Maximum marks for each question are indicated.

Candidates should answer the questions in English.

This paper consists of 5 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

1. You are provided with a permanent slide labelled P_1 . Observe the slide using a light microscope.
- (a) Draw a labelled diagram of specimen P_1 as observed using a light microscope. (10 marks)
 - (b)
 - (i) Identify specimen P_1 . (2 marks)
 - (ii) State the mode of locomotion of P_1 in relation to its habitat. (2 marks)
 - (iii) State the mode of nutrition of specimen P_1 . (2 marks)
 - (c) Classify specimen P_1 up to species level. (7 marks)
 - (d) Describe the economic importance of specimen P_1 . (2 marks)
2. You are provided with four slides labelled P_2 , P_3 , P_4 , and P_5 representing a cell undergoing cell division. Observe the slides under high power objectives.
- (a) Draw labelled diagrams of each of the slides labelled P_2 , P_3 , P_4 , and P_5 as observed under high power objectives (24 marks)
 - (b) Identify the type of cell division represented by the slides. (1 mark)

3. (a) Figure 1 represents different types of bacteria.

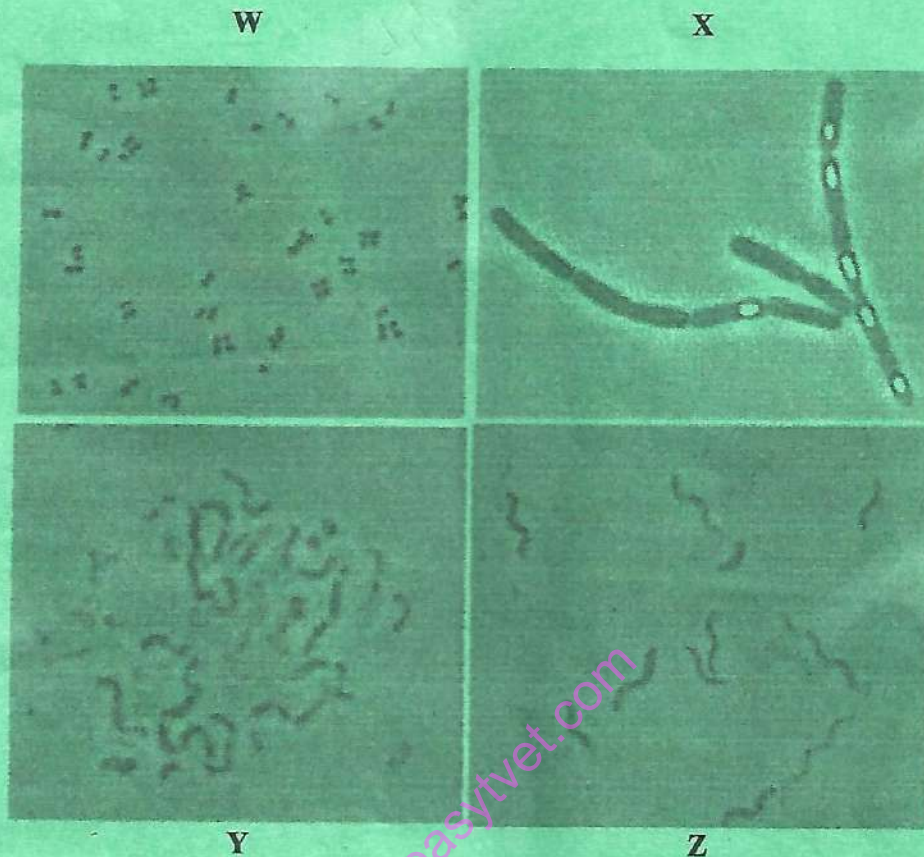


Fig. 1

Draw and classify the bacteria labelled W, X, Y and Z according to morphology.

(8 marks)

- (b) You are provided with two bacterial cultures labelled P_6 and P_7 . Make a smear of each on two separate slides labelled P_6 and P_7 . Perform gram stain reaction on each of the slides P_6 and P_7 . Observe under light microscope.

(i) draw labelled diagrams of P_6 and P_7 . (8 marks)

(ii) classify specimens P_6 and P_7 on the basis of the test carried out. (2 marks)

(iii) Explain the procedure of the gram stain technique. (7 marks)

4. Figures 2, 3 and 4 represent organisms in three different kingdoms.

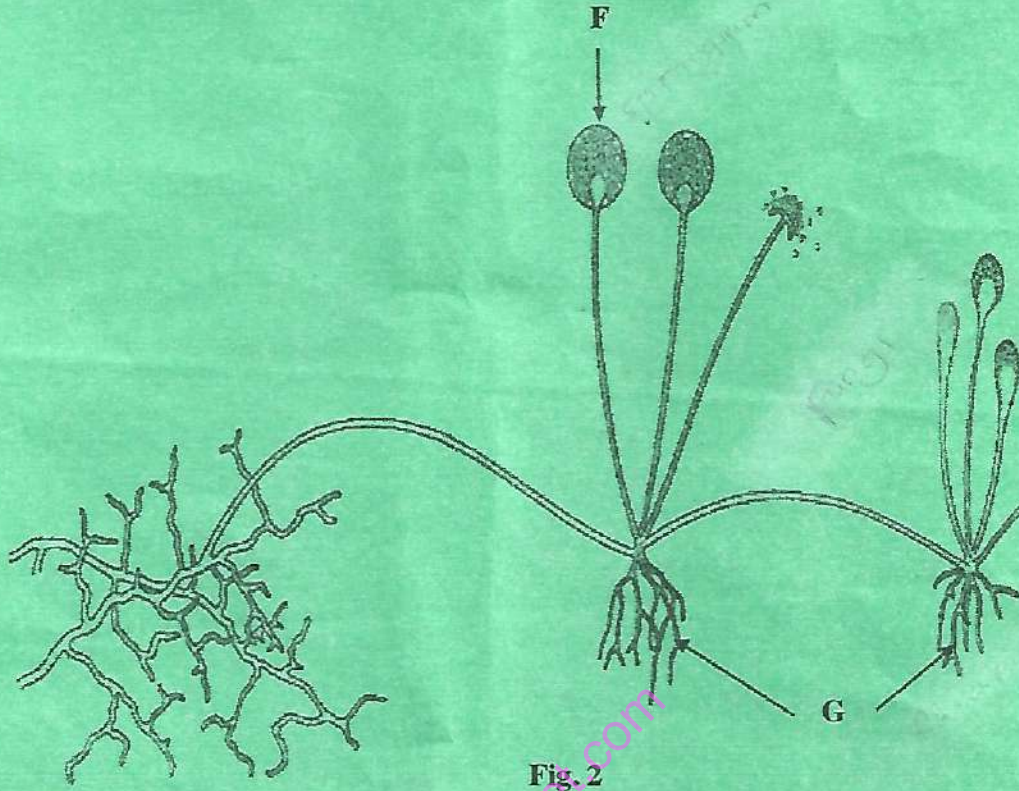


Fig. 2

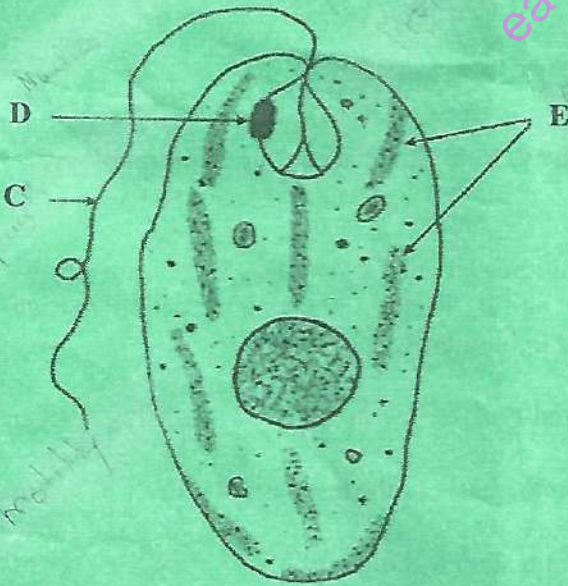


Fig. 3

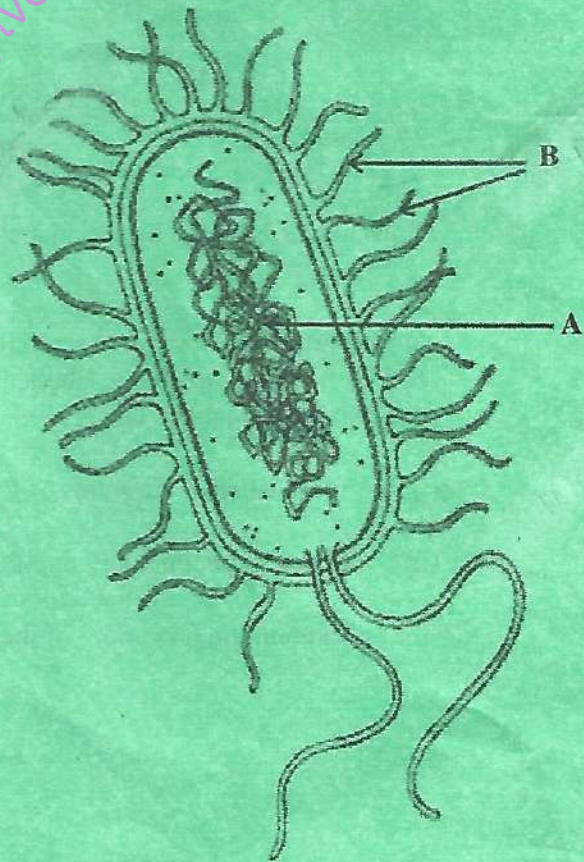


Fig. 4

- (a) Identify the kingdoms to which each of the organisms represented by figures 2, 3 and 4 belong. (3 marks)
- (b) (i) Identify each of the structures labelled A, B, C, D, E, F and G. (7 marks)
- (ii) Give the function of each of the structures labelled B, C, E and F. (4 marks)
- (c) (i) Outline **two** structural differences between organisms represented in figures 3 and 4. (2 marks)
- (ii) State **one** structural similarity between organisms represented in figures 3 and 4. (1 mark)
- (d) Identify the habitat of each of the organisms represented in figures 3 and 4. (2 marks)
- (e) State any:
- (i) **four** positive economic importance of the organisms in the kingdom represented by figure 2. (4 marks)
- (ii) **two** negative economic importance of the organisms in the kingdom represented by figure 2. (2 marks)

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